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Attorney's Docket No.: 56446-20010.01/-
045US1/D1230-1

Amendment to the Claims:

Please amend the claims as follows:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): An isolated or recombinant polynucleotide selected from the group consisting of:

- (a) a polynucleotide encoding a thermostable phosphatase comprising an amino acid sequence as set forth in SEQ ID NO: 28; and
- (b) a polynucleotide which is complementary to the polynucleotide of (a).

Claim 2 (previously presented): An isolated or recombinant polynucleotide selected from the group consisting of:

- (a) SEQ ID NO: 19; and (b) SEQ ID NO: 19, where T can also be U; wherein the polynucleotide of (a) and (b) encode a phosphatase.

Claim 3 (currently amended): The isolated or recombinant polynucleotide of claims 1 [[,]] or 2, [[5, 13, or 14,]] wherein the polynucleotide comprises DNA.

Claim 4 (currently amended): The isolated or recombinant polynucleotide of claims 1 [[,]] or 2, [[5, 13, or 14,]] wherein the polynucleotide comprises RNA.

Claim 5 (currently amended): An isolated or recombinant isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide having phosphatase activity and having at least 70% sequence identity to a polynucleotide encoding an enzyme having phosphatase activity and contained in ATCC Deposit No. 97379, or enzymatically active fragments thereof, ~~wherein said enzyme is obtained from *Ammonifex degenesi* KC4;~~ and
- (b) a polynucleotide complementary to the polynucleotide of (a).

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Claim 6 (currently amended): A vector comprising the polynucleotide of claim 5 ~~or the DNA of claim 3.~~

Claim 7 (previously presented): A host cell comprising the vector of claim 6.

Claim 8 (currently amended): A process for producing a polypeptide comprising: expressing from the host cell of claim 7 a polypeptide encoded by the polynucleotide ~~or said DNA.~~

Claim 9 (currently amended): A process for producing a recombinant cell comprising: transforming or transfecting a cell with the vector of claim 6 such that the cell expresses the polypeptide encoded by the polynucleotide ~~or the DNA contained in the vector.~~

Claim 10 (currently amended): An isolated or recombinant phosphatase ~~comprising of which at least a portion is encoded by a polynucleotide of claim 5 and wherein the phosphatase comprises~~ an amino acid sequence which has at least 70% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 11 (currently amended): An isolated or recombinant phosphatase enzyme ~~comprising of which at least a portion is encoded by a polynucleotide of claim 5 and wherein the phosphatase comprises~~ an amino acid sequence which has at least 70% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28 or an enzymatically active fragment thereof.

Claim 12 (canceled)

Claim 13 (previously presented): An isolated or recombinant polynucleotide selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide having phosphatase activity and having at least 90% sequence identity to a polynucleotide that encodes the polypeptide sequence of SEQ ID NO:28, or enzymatically active fragments thereof; and

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(b) a polynucleotide complementary to (a).

Claim 14 (previously presented): An isolated or recombinant polynucleotide selected from the group consisting of:

(a) a polynucleotide that encodes a polypeptide having at least 70% sequence identity to SEQ ID NO:28 or enzymatically active fragments thereof, wherein the polypeptide has phosphatase activity; and

(b) a polynucleotide complementary to (a).

Claim 15 (previously presented): An isolated or recombinant polynucleotide having a length of at least 15 nucleotides, wherein the nucleotides are contiguous bases of the polynucleotide of claim 1 and the polynucleotide hybridizes with specificity to a polynucleotide that encodes a phosphatase or hybridizes with specificity to its complementary sequence, or hybridizes with specificity to a nucleic acid encoding an enzymatically active fragment of the phosphatase, under hybridization conditions comprising 0.9 M NaCl, 50 mM NaH₂PO₄, and 0.5% SDS at 45°C.

Claim 16 (previously presented): An isolated or recombinant polynucleotide having a length of at least 15 nucleotides, wherein the nucleotides are contiguous bases of the polynucleotide of claim 14 and hybridizes with specificity to its complementary sequence, and the polynucleotide hybridizes with specificity to a polynucleotide that encodes a phosphatase, or hybridizes with specificity to a nucleic acid encoding an enzymatically active fragment of the phosphatase, or its complement, under hybridization conditions comprising 0.9M NaCl, 50 mM NaH₂PO₄, and 0.5% SDS at 45°C.

Claim 17 (previously presented): An isolated or recombinant polynucleotide having a length of at least 15 nucleotides, wherein the nucleotides are contiguous bases of the polynucleotide of claim 5 and the polynucleotide hybridizes with specificity to a polynucleotide that encodes a polypeptide that has phosphatase activity or hybridizes with specificity to its

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complementary sequence, under hybridization conditions comprising 0.9M NaCl, 50 mM NaH₂PO₄, and 0.5% SDS at 45°C.

Claim 18 (currently amended): A polypeptide comprising an ~~[[An]]~~
enzymatically active fragment of the phosphatase of claim 10, wherein the enzymatically active
fragment ~~is comprises~~ at least 30 ~~contiguous~~ amino acid residues in length and has phosphatase
activity.

Claim 19 (currently amended): A polypeptide comprising an ~~[[An]]~~
enzymatically active fragment of the phosphatase of claim 11, wherein the enzymatically active
fragment ~~is comprises~~ at least 30 ~~contiguous~~ amino acid residues in length and has phosphatase
activity.

Claim 20 (previously presented): An isolated or recombinant polynucleotide
having a length of at least 15 nucleotides, wherein the nucleotides are contiguous bases of the
polynucleotide of claim 13 and hybridize with specificity to a polynucleotide that encodes a
polypeptide that has phosphatase activity or hybridize with specificity to its complementary
sequence, under hybridization conditions comprising 0.9M NaCl, 50 mM NaH₂PO₄, and 0.5%
SDS at 45°C and a wash under conditions comprising 30 minutes at room temperature in 150
mM NaCl, 20 mM Tris hydrochloride, pH 7.8, 1 mM Na₂EDTA, 0.5% SDS.

Claim 21 (currently amended): An isolated or recombinant polynucleotide having
a length of at least 15 nucleotides, wherein the nucleotides are contiguous bases of the
polynucleotide of claim 14 and hybridize with specificity to a polynucleotide that encodes a
polypeptide that has phosphatase activity or hybridize with specificity to its complementary
sequence, under hybridization conditions comprising 0.9M NaCl, 50 mM NaH₂PO₄, and 0.5%
SDS at 45°C and a wash under conditions comprising 30 minutes at room temperature in 150
mM NaCl, 20 mM Tris hydrochloride, pH 7.8, 1 mM Na₂EDTA, 0.5% SDS.

Claims 22 to 30 (canceled)

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Claim 31 (previously presented): The isolated or recombinant polynucleotide of claim 14 comprising a polynucleotide that encodes a polypeptide having at least 95% sequence identity to SEQ ID NO:28 or enzymatically active fragments thereof.

Claim 32 (previously presented): The isolated or recombinant polynucleotide of claim 31 comprising a polynucleotide that encodes a polypeptide having at least 97% sequence identity to SEQ ID NO:28 or enzymatically active fragments thereof.

Claim 33 (previously presented): The isolated or recombinant phosphatase of claim 10, wherein the phosphatase comprises an amino acid sequence which has at least 80% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 34 (previously presented): The isolated or recombinant phosphatase of claim 33, wherein the phosphatase comprises an amino acid sequence which has at least 90% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 35 (previously presented): The isolated or recombinant phosphatase of claim 34, wherein the phosphatase comprises an amino acid sequence which has at least 95% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 36 (previously presented): The isolated or recombinant phosphatase of claim 35, wherein the phosphatase comprises an amino acid sequence which has at least 97% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 37 (previously presented): The isolated or recombinant phosphatase of claim 10, wherein the phosphatase activity is an alkaline phosphatase activity.

Claim 38 (previously presented): The isolated or recombinant polynucleotide of claim 14, wherein the phosphatase activity is an alkaline phosphatase activity.

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Claim 39 (previously presented): The isolated or recombinant polynucleotide of claim 14, wherein the phosphatase activity is a phosphodiesterase activity.

Claim 40 (previously presented): A method for dephosphorylating a phosphorylated nucleic acid comprising contacting the isolated or recombinant phosphatase of claim 10 with the phosphorylated nucleic acid.

Claim 41 (previously presented): The isolated or recombinant polynucleotide of claim 15 having a length of at least 30 nucleotides.

Claim 42 (previously presented): The isolated or recombinant polynucleotide of claim 41 having a length of at least 50 nucleotides.

Claim 43 (previously presented): The isolated or recombinant polynucleotide of claim 42 having a length of at least 150 nucleotides.

Claim 44 (previously presented): The isolated or recombinant polynucleotide of claim 14, wherein the polynucleotide comprises a sequence encoding an amino acid sequence having at least 80% sequence identity to the amino acid sequence as set forth in SEQ ID NO: 28.

Claim 45 (new): The isolated or recombinant polynucleotide of claim 5, wherein the sequence identity is at least 90%.

Claim 46 (new): The isolated or recombinant polynucleotide of claims 5, 13, or 14, wherein the polynucleotide comprises DNA.

Claim 47 (new): The isolated or recombinant polynucleotide of claims 5, 13, or 14, wherein the polynucleotide comprises RNA.

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Claim 48 (new): A vector comprising the polynucleotide of claim 1 or claim 2.

Claim 49 (new): A host cell comprising the vector of claim 48.

Claim 50 (new): A process for producing a polypeptide comprising expressing from the host cell of claim 49 a polypeptide encoded by the polynucleotide.

Claim 51 (new): A process for producing a recombinant cell comprising: transforming or transfecting a cell with the vector of claim 48 such that the cell expresses the polypeptide encoded by the polynucleotide.

Claim 52 (new): A method for dephosphorylating a phosphorylated nucleic acid comprising contacting the phosphorylated nucleic acid with a phosphatase encoded by the isolated or recombinant of claim 1 or claim 2.